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ABSTRACT

In May 1972, 2,900 copies of a survey were distributed eliciting opinions about the meaning of some qualifying adjectives and phrases commonly used in "verbal communications." These same adjective phrases are commonly used in survey research. They include phrases such as "a few," "a majority," "nearly all," and other quantifiers. The 1972 survey had a 40% response rate, indicative of interest in the study. This study updates that 1972 study, reporting findings from different groups of subjects. Nine groups (graduate students in several disciplines, including education, undergraduates, and engineers and administrators) ranging in size from 3 to 20 members were surveyed. Results made it clear that individuals within different groups give different interpretations to quantifying phrases, and that differences also exist among groups. It is suggested that there is a need to study item reliability in surveys in more detail if words and phrases, such as the 22 identified in this study, are to be included in response options, narrative instructions in a survey, or reporting on the survey findings. Appendix A is the report from the 1972 survey, and Appendix B contains a copy of the original survey form. (Contains five tables, eight figures, and three references.) (SLD)

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ED 419 839

WORDS AND THEIR VALUE

TO THE

SURVEY RESEARCHER

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WORDS AND THEIR VALUE TO
THE SURVEY RESEARCHER

DESCRIPTORS:
Survey research, research methodology, validity/reliability, instruments

Background

In May of 1972, 2,900 copies of a survey were distributed eliciting opinions regarding the meaning of some qualifying adjectives/phrases commonly used in "verbal communications." These same adjectives/phrases are commonly used in survey research. John Hoyt (1972) in his report emphasizes the problems which arise when using some of these words and/or phrases, particularly when decisions might be made based upon an interpretation of what these qualifying adjectives/phrases might mean. In the 1972 paper, the author does not identify how the 2,900 initial sample was selected. He indicates that within three weeks a 40% response was obtained, "demonstrating that there was 'rather considerable' interest in the subject." Stanley Payne (1951) in his provocative book points out how important it is in developing an instrument with questions that the meanings of the allowable responses be as clear as possible. Paul Scipione (1995) in his timely article includes the following introductory comments:

> "Those of us who design and direct research studies spend so much time with numbers that we often forget that words also represent values (*in the minds of the writer as well as the readers;* authors comments). Yet both the questionnaires we use to elicit information from respondents and the reports we use to communicate research findings and recommendations to clients depend significantly on language."

He goes on to make several additional points which, independently, have been raised after more than 15 years of survey research involvement by the author of this paper:

- We speak of a ***substantial*** change rather than indicating the numerical amount of the change;
- We convert descriptive words to numerical values and develop descriptive statistics, such as averages, to discuss the findings; and,
- We make considerable use of descriptive words and phrases, such as ***a lot, many,*** or ***frequently***, in providing a report on the findings of a survey.

The descriptive results of the 1972 study appear as Appendix A to this paper. A copy of the initial survey form appears as Appendix B. It is important to note that these two appendices are exactly as reported by John Hoyt in 1972.

Objectives/Purposes

Believing strongly that the 1972 results have probably not changed much and, because of the author's interest in using surveys to collect useful information in educational research and for making management decisions both within education and elsewhere, the author received release time from his educational institution to collect additional data using the same survey and the same set of instructions. Had the author been aware of the Scipione (1995) study at the time of his research, the items used on the instrument might have been slightly modified; although, from a research perspective, a replication of the exact instrument and instructions (Hoyt, 1972) seemed most appropriate.

The purpose of this study was to update the 1972 study and to report findings from groups of different subjects. It was hypothesized that individuals who might become subjects for surveys would continue to attach different meanings or interpretations to the words and phrases in the original study, creating a need for an awareness on the part of those using the survey results about the possible differences in interpretation of the words and phrases, not only as instruments are developed but also as the results are reported.

Perspectives/Theoretical Framework

Of considerable concern in survey research is assessing the reliability and validity of an instrument and also items on the instrument. In the context of this paper, reliability of an item is the extent to which the item means the same thing to all respondents at a given time and the same thing to an individual respondent at different points in time. It is generally agreed that survey results may be, essentially, worthless if the individual items on the instrument are unreliable and invalid. This paper addresses the reliability issue in terms of the way in which words or phrases used in assessing opinions or perceptions may be interpreted by the respondent and, hence, interpreted and reported by the researcher. The instrument used in the 1972 study and again in this study contains 22 items.

Methods, Techniques, Modes of Inquiry

Unlike the 1972 study in which the sampling procedure was not clearly identified, the intent of this replication was to utilize individuals from nine different groups to address two questions:

- Do those responding today produce similar results (in terms of averages, medians, modes, ranges, and distributions) to those obtained in 1972?
- Is there a difference in the response patterns among nine different groups?

The instrument was administered in a group setting by the author and by three other faculty members at a single institution. Because of the ambiguity of the 1972 instrument (Appendix B), faculty explained what was expected in assigning numerical values to the verbal descriptions. Data were coded, entered onto an EXCEL spread sheet and imported into NCSS 97© 6.0 for Windows, a statistical analysis software package.

Data Sources or Evidence

The nine groups from which data were collected were:

1. A research class at the doctoral level, fall 1995.
2. A special class of doctoral students studying "organization change," fall 1995.
3. A research class at the doctoral level, winter 1996.
4. Undergraduate students in a communications major, fall 1995.
5. An education faculty associated with graduate programs, winter 1996.
6. A third research class at the doctoral level, winter 1996.
7. A masters class majoring in educational administration, winter 1996.
8. A masters class in research with students primarily in teacher training education, spring 1996.
9. A group of engineers and administrators in the management construction business during a seminar on survey methods, summer 1996.

The nine groups above ranged in size from nine to twenty three individuals. After data were coded and summary statistics obtained, individual responses were reviewed for logic and consistency. In three cases the results were discarded because the respondent apparently did not understand the directions.

Results and/or Conclusions/Point of View

Summary statistics for the 1972 data appear as Appendix C. Appendix D (Tables 1 through 5) indicate for each of the nine groups and each of the 22 quantifying phrases, the following statistics:

- Arithmetic mean (average)
- Median
- Mode
- The range of reported values
- The minimum and maximum reported values

It is interesting to note, for selected quantifying phrases and the arithmetic mean, median, and minimum and maximum values, comparisons among the nine groups and the Hoyt (1972) study:

	Hoyt	1	2	3	4	5	6	8[2]	9
ARITHMETIC MEAN									
A few	8.31	7.4	17.1	9.8	3.9	17.4	8.2	10.1	6.4
Many	31-40[1]	54.3	45.7	51.7	30.4	50.3	49.9	45.8	44.9
A majority	51-55	59.8	56.7	56.9	57.9	56.6	66.4	68.7	56.8
Nearly all	86-90	95.4	87.8	94.7	85.8	84	95.5	88.1	85.6
MODE[3]									
A few	10	3	3	3	3		5	3	3
Many	40	50		80		60		40	25
A majority	51	51	51	51	51	51	51	51	51
Nearly all	90	98	90		95	95		90	
MAXIMUM AND MINIMUM									
A few	N/A[4]	0-25	3-80	3-50	2-12	3-80	2-25	3-60	0-30
Many	N/A	20-100	15-80	10-100	4-80	20-90	20-99	6-90	5-100
A majority	N/A	51-90	51-90	10-90	10-99	51-90	51-100	40-98	25-100
Nearly all	N/A	90-99	20-98	85-99	20-99	0-99	89-99	5-99	25-99

1 - For some reason, Hoyt reported, for some phrases, the arithmetic mean as a range of values.
2 - Data from Group 7 in Appendix D appear to be entered in error and have not been included in this table.
3 - Due to small samples the mode did not exist in some of the groups.
4 - Hoyt did not report ranges.

Detail for the other phrases and groups are reported in Appendix D.

To give a flavor of the specific relative frequency of responses, Appendix E contains histograms for the following phrases:

- A couple
- A few
- A majority
- A substantial majority
- Numerous
- Lots
- A large proportion of
- Virtually all

Even if we assume that some of the respondents may not have understood the directions or were "joking around," the results still are unnerving and suggest the need for great caution in using quantifying phrases in both the body of surveys and reporting the findings of surveys.

It is quite clear that individuals within groups give different interpretations to quantifying phrases and among groups differences also exist. It is suggested, although not necessarily supported by the data in this study, that different professions might exhibit differences in not only location statistics but also ranges.

Educational or Scientific Importance of the Study

It is clear to the author that the diverse opinions with respect to the meaning of many of the "quantifying" words and phrases are pause for reflection on how we are analyzing and reporting survey results. It is suggested that there is a need to pursue further the issue of item reliability if words and phrases, such as the 22 identified in this study, are to be included in response options, in narrative instructions in a survey, or in reporting on the survey findings.

REFERENCES

Hoyt, J. S. (1972). Do quantifying adjectives mean the same thing to all people? Agricultural Extension Services: University of Minnesota.

Scipione, P. A. (1995). The value of words: numerical perceptions associated with descriptive words and phrases in market research reports. *Journal of Advertising Research*, May/June 1995.

Payne, S. L. (1951). The art of asking questions. Princeton, NJ: Princeton University Press.

NOTE: Scipione's paper includes 17 excellent references related to both verbal and visual presentations of items associated with questionnaires and their analyses.

RESULTS OF THE SURVEY

General

The first, and probably strongest, point to be made in looking at the survey results is that, despite the large number of valid responses (1180) and the large rate of return (40%) to the survey, no claim is made for the precision of the results. Indeed, the most valid single conclusion that can be drawn is that the quantifying adjectives used in the survey represent to the sample of respondents surveyed a broad range of numbers. It is also clear that the context in which the adjective is used may be as relevant to the quantity implied as is the quantifying phrase itself. In addition, the results suggest to all who verbalize quantitative data that they ought to be as precise as possible and, to those of us who listen to verbalized data, to insist that the speaker inject precision into his verbalizations.

The meanings of the quantifying adjectives are summarized briefly in figure 1 and graphically in figures 2 through 25. In addition, for those who are concerned with additional statistical analysis a printout of the 1180 valid responses for each of the quantifying adjectives is available from MAPS.

The graphical representations, in addition to presenting the distribution of the responses, also show three statistics for each response. First, the "mode" which is simply the discrete number that appeared most often for each adjective. Second, the "median" which is the number in the series of responses that represents a point such that half of the numerical responses fall on one side of it and half on the other side. Third, the "mean" which is the sum of all of the responses divided by the number of responses. The mean is also frequently referred to as the "average" response. To illustrate, if a group of 9 numerical responses were: 1,1,2,2,3,4,4,4,6 --then the mode would be 4 (the most frequent response); the median would be 3 (there are as many responses below 3 as there are above 3); and the mean would be 3 (the sum of all the responses, 29, divided by the number of responses, 9).

Another general observation about the responses is that, with the exception of quantifying adjectives which represent numbers less than 10 or numbers greater than 90, the most frequent responses fell on numbers divisible by 5. There are two other exceptions to this observation; the phrase 'a minority' and the phrase 'a majority' are subject to rather precise statistical definition and the responses were, as one would expect, most frequently given as these two single numbers. For responses where the quantifying adjective has a mode of 90 or above there were relatively frequent usages of the numbers 95, 98, and 99 and a relatively infrequent choice of the other discrete numbers between 90 and 100.

Out of a total of 100 items (votes, apples, dollars, opinions, or what have you) place a number in the right hand column that represents your understanding of each of the following descriptors. (Please use only one whole number as your "best" answer; no decimals, fractions, or ranges). Remember, enter the whole number out of 100(%) for each description.

Descriptor	Number it Represents
"A few"	_____
"Damn few"	_____
"A couple"	_____
"Lots"	_____
"A majority"	_____
"Several"	_____
"Many"	_____
"Most"	_____
"Almost all"	_____
"Hardly any"	_____
"A substantial majority"	_____
"A significant number of . . ."	_____
"Virtually all"	_____
"Almost none"	_____
"A small number of"	_____
"Numerous"	_____
"Nearly all"	_____
"A minority of"	_____
"A consensus of"	_____
"Not very man of"	_____
"A large proportion of"	_____
"A clear mandate" (i.e. votes out of the 100)	_____

SUMMARY OF SURVEY RESPONSES

APPENDIX C

Quantifying Phrase	Response Statistic		
	Mode (Most Frequent)	Median* (Mid-Point)	Mean* (Average)
Almost None	1	2.19	2.84
A Couple	2	2.04	2.21
Damn Few	3	3.17	3.81
Several	3	7.47	11.94
Hardly Any	5	4.52	4.84
Few	10	7.08	8.31
Small Number of	10	8.16	9.02
Not Very Many	10	6 - 10	6 - 10
Lots	40	41 - 50	41 - 50
Many	40	31 - 40	31 - 40
Significant Number of	40	31 - 40	31 - 40
Considerable Number of	40	31 - 40	31 - 40
Numerous	40	31 - 40	31 - 40
Minority	49	21 - 30	21 - 30
Majority	51	51 - 55	51 - 55
Consensus	60	51 - 60	51 - 60
Substantial Majority	75	66 - 70	66 - 70
Large Proportion	75	61 - 70	51 - 60
Clear Mandate	75	61 - 70	61 - 70
Most	90	71 - 80	61 - 70
Nearly All	90	86 - 90	86 - 90
Almost All	95	86 - 90	86 - 90
Virtually All	95	95.25	94.04

* In order to make the statistics of general usefulness medians and means are reported as ranges in those cases when appropriate.

TABLE 1. Arithmetic Mean for Nine Groups on Twenty Two Items

MEAN									
Average									
Quantifying Phrase	Group 1	Group 2	Group 3	Group 4	Group 5	Group 6	Group 7	Group 8	Group 9
Age	41	42		21.6	53	40.3	29.3	29.3	45.2
A Few	7.4	17.1	9.8	3.9	17.4	8.2	10.1	10.1	6.4
A Damn Few	3.3	12.7	4.5	3.9	4.3	4.7	3.2	3.2	8.4
A Couple	2	14	2.9	2	10.5	10.9	6.4	6.4	7.1
Lots	60.2	63.7	58.7	34.9	46.6	62.6	46.1	46.1	48.9
A Majority	59.8	56.7	56.9	57.9	56.6	66.4	68.7	68.7	56.8
Several	23.3	17.3	15	13.1	21.1	16.5	22.9	22.9	13.9
Many	54.3	45.7	51.7	30.4	50.3	49.9	45.8	45.8	44.9
Most	81	76.7	85.4	67.9	78	81.2	81.7	81.7	75.6
Almost All	95.8	93.3	94.4	81.4	92.4	85.5	86.3	86.3	88.2
Hardly Any	4.6	14.1	9.1	6.2	2.8	8.6	8.5	8.5	10.2
A Substantial Majori	76.5	69.5	77.2	72.8	61.5	74.4	71.5	71.5	68.7
A Significant Numbe	57.4	46.7	60.6	49.3	54.3	54.2	58.3	58.3	50.2
Virtually All	87.9	94.8	95	90.7	85.7	95.8	89.4	89.4	87.9
Almost None	2.4	10.4	5.9	2.8	2.2	1.8	6.9	6.8	8.3
A Small Number of	6.4	16.6	11.1	9.6	7.7	9	8.7	8.7	11.6
Numerous	44.6	50.7	51.2	42.3	39.5	39.4	41.6	41.6	39.3
Nearly All	95.4	87.8	94.7	85.8	84	95.5	55.1	88.1	85.6
A Minority of	24.4	42.3	33.9	21.1	41.6	49.1	26.6	26.6	30.4
A Consensus of	73.5	74.7	73.1	59.4	84.5	81.5	68.3	68.3	70.9
Not Very Many of	12.9	15	19	10.5	8.3	15.5	12.5	12.5	13
A Large Proportion	74	70	71.5	70.5	70.5	68.4	66.2	66.2	56.9
A Clear Mandate	84.4	68.7	77.3	81.9	69.1	82	59.5	59.5	67.7

APPENDIX D

TABLE 2. Median for Nine Groups on Twenty Two Items

MEDIAN									
Quantifying Phrase	Group 1	Group 2	Group 3	Group 4	Group 5	Group 6	Group 7	Group 8	Group 9
Age	41	41		20	56	41.5	27	27	44
A Few	6	7	6	3	12	5	5	5	3
A Damn Few	3	5	3	3	2.5	3	3	3	3
A Couple	2	2	2	2	2	2	2	2	2
Lots	70	75	61	20	55.5	75	40	40	50
A Majority	51	51	51	51	51	60	70	70	51
Several	9.5	7	9	9.5	12	10	10	10	6.5
Many	50	40	52.5	25	47.5	45	40	40	35
Most	85	80	90	82.5	80	85	90	90	80
Almost All	96	95	95	90	90	95	95	95	90
Hardly Any	3	5	3	4.5	2.5	3	3	3	4.5
A Substantial Major	79	75	75	75	70	75	77	77	75
A Significant Numb	60	40	65	50	65	51	60	60	55
Virtually All	98	98	98	95	95	98	98	98	96
Almost None	1	2	1.5	1.8	2	2	1	1	3
A Small Number of	5	10	7.5	10	9	7	6	6	7
Numerous	48	50	47.5	30	35	37	35	35	30
Nearly All	97	90	95	94	95	98	95	95	90
A Minority of	20	40	36.5	22.5	47	40	25	25	31.5
A Consensus of	71	80	75	55	88	85	70	70	66
Not Very Many of	10	12	12.5	10	4	15	10	10	10
A Large Proportion	72.5	70	75	78	75	70	75	75	66
A Clear Mandate	82.5	70	80	85	68.5	85	75	75	70

TABLE 3. Mode for Nine Groups on Twenty Two Items

MODE									
Quantifying Phrase	Group 1	Group 2	Group 3	Group 4	Group 5	Group 6	Group 7	Group 8	Group 9
Age	41	35		20	57		23	23	
A Few	3	3	3	3		5	3	3	3
A Damn Few	3	3	3	3	2	3	3	3	3
A Couple	2	2	2	2	2	2	2	2	2
Lots	70	30		20		75			50
A Majority	51	51	51	51	51	51	51	51	51
Several		3	15	5			5	5	
Many	50		80		60		40	40	25
Most	90	90	90	90			90	90	
Almost All	99	95	99		90		95	95	90
Hardly Any		2	1				2	2	1
A Substantial Major	80	75	75	75	70		85	85	75
A Significant Numb	60	40	75	50			60	60	70
Virtually All	99	98	99	95	95	99	99	99	98
Almost None	1	1	1	1			1	1	1
A Small Number of	10	6	10	10	10		5	5	5
Numerous	60		35	30		15	30	30	30
Nearly All	98	90		95	95		90	90	
A Minority of	20	49	49	30	49	40	10	10	
A Consensus of		100	100	100	100	100			100
Not Very Many of	10	10	10		3		10	10	10
A Large Proportion of		70	75		80	70			70
A Clear Mandate	75	75	80	100	67		80	80	75

TABLE 4. Range Value for Nine Groups on Twenty Two Items

RANGE VALUE (The Difference Between the Minimum and Maximum Values)									
Quantifying Phrase	Group 1	Group 2	Group 3	Group 4	Group 5	Group 6	Group 7	Group 8	Group 9
Age	19	22		10	35	29	21	21	16
A Few	25	77	47	10	77	23	57	57	30
A Damn Few	10	88	22	8	15	11	9	9	74
A Couple	0	88	18	0	78	98	88	88	78
Lots	100	90	85	83	70	85	95	96	95
A Majority	39	39	80	89	39	49	58	58	75
Several	88	77	97	46	87	68	86	86	67
Many	80	65	90	76	70	79	84	84	95
Most	48	44	40	69	25	49	90	90	94
Almost All	9	19	20	94	9	90	98	98	74
Hardly Any	20	88	99	29	5	68	74	74	79
A Substantial Major	48	70	38	90	75	53	90	90	75
A Significant Numb	95	65	75	55	55	86	93	93	85
Virtually All	99	19	24	79	100	9	90	90	74
Almost None	10	69	74	9	5	4	90	90	80
A Small Number of	12	68	79	18	12	24	23	23	27
Numerous	81	57	70	66	80	68	79	79	99
Nearly All	9	78	14	79	99	10	94	94	74
A Minority of	49	65	79	46	77	90	73	73	45
A Consensus of	49	65	95	80	49	49	99	99	70
Not Very Many of	30	33	88	21	30	32	28	47	25
A Large Proportion	40	40	60	70	65	76	81	50	80
A Clear Mandate	33	60	52	50	100	40	99	49	60

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TABLE 5. Range of Values for Nine Groups on Twenty Two Items

	A	B	C	D	E	F	G	H	I	J	K
1											
2	RANGE OF VALUES										
3											
4	Quantifying Phrase		Group 1	Group 2	Group 3	Group 4	Group 5	Group 6	Group 7	Group 8	Group 9
5	Age		30 to 49	35 to 57		20 to 30	31 to 66	25 to 54	22 to 43	22 to 43	38 to 54
6	A Few		0 to 25	3 to 80	3 to 50	2 to 12	3 to 80	2 to 25	3 to 60	3 to 60	0 to 30
7	A Damn Few		0 to 10	2 to 90	2 to 24	2 to 10	0 to 15	2 to 13	1 to 10	1 to 10	1 to 75
8	A Couple		2 to 2	2 to 90	2 to 20	2 to 2	2 to 80	2 to 100	2 to 90	2 to 90	2 to 80
9	Lots		0 to 100	10 to 100	15 to 100	4 to 87	0 to 70	15 to 100	4 to 100	4 to 100	5 to 100
10	A Majority		51 to 90	51 to 90	10 to 90	10 to 99	51 to 90	51 to 100	40 to 98	40 to 98	25 to 100
11	Several		2 to 90	3 to 80	3 to 100	4 to 50	3 to 90	2 to 70	4 to 90	4 to 90	3 to 70
12	Many		20 to 100	15 to 80	10 to 100	4 to 80	20 to 90	20 to 99	6 to 90	6 to 90	5 to 100
13	Most		51 to 99	51 to 95	60 to 100	10 to 99	65 to 90	51 to 100	10 to 100	10 to 100	5 to 99
14	Almost All		90 to 99	80 to 99	80 to 100	5 to 99	90 to 99	9 to 99	1 to 99	1 to 99	25 to 99
15	Hardly Any		0 to 20	2 to 90	1 to 100	1 to 30	0 to 5	1 to 69	1 to 75	1 to 75	1 to 80
16	A Substantial Majority		51 to 99	20 to 90	60 to 98	10 to 100	0 to 75	45 to 98	8 to 98	8 to 98	20 to 95
17	A Significant Number of		0 to 95	15 to 80	20 to 95	20 to 75	25 to 80	10 to 96	5 to 98	5 to 98	10 to 95
18	Virtually All		0 to 99	80 to 99	75 to 99	20 to 99	0 to 100	90 to 99	10 to 100	10 to 100	25 to 99
19	Almost None		0 to 10	1 to 70	1 to 75	1 to 10	0 to 5	1 to 5	0 to 90	0 to 90	0 to 80
20	A Small Number of		0 to 12	2 to 70	1 to 80	2 to 20	0 to 12	2 to 26	2 to 25	2 to 25	3 to 30
21	Numerous		0 to 81	23 to 80	20 to 90	20 to 86	0 to 80	7 to 75	10 to 89	10 to 89	0 to 99
22	Nearly All		90 to 99	20 to 98	85 to 99	20 to 99	0 to 99	89 to 99	5 to 99	5 to 99	25 to 99
23	A Minority of		0 to 49	15 to 80	1 to 80	3 to 49	3 to 90	10 to 100	2 to 75	2 to 75	4 to 49
24	A Consensus of		51 to 100	35 to 100	5 to 100	20 to 100	51 to 100	51 to 100	1 to 100	1 to 100	30 to 100
25	Not Very Many of		0 to 30	7 to 40	2 to 90	2 to 23	0 to 30	3 to 35	2 to 30	3 to 50	5 to 30
26	A Large Proportion of		60 to 100	45 to 85	30 to 90	20 to 90	25 to 90	20 to 96	3 to 90	45 to 95	5 to 85
27	A Clear Mandate		67 to 100	30 to 90	48 to 100	50 to 100	0 to 100	60 to 100	1 to 100	51 to 100	30 to 90

Page/Date/Time 1 03-31-1998 12:37:31
Database D:\AERA\QualDB.S0

Histogram Section

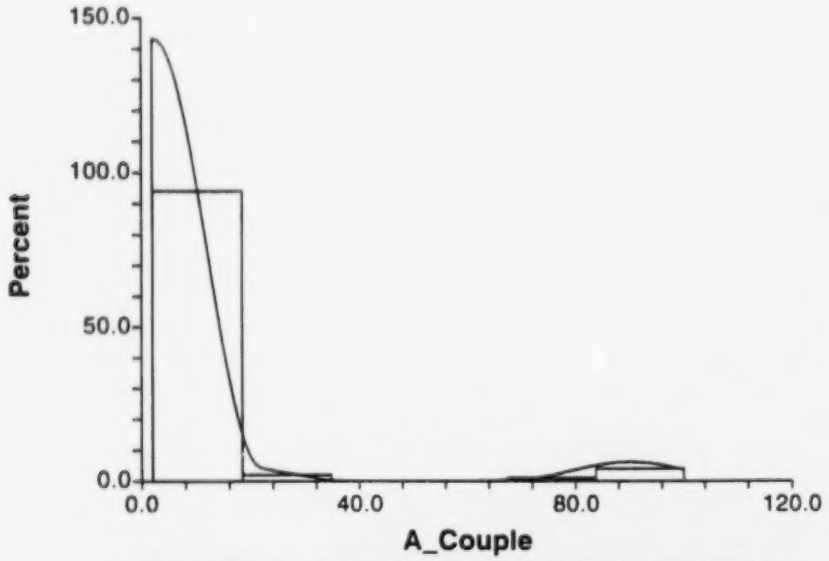

FIGURE 1. HISTOGRAM FOR "A COUPLE"

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Database D:\AERA\QualDB.S0

Histogram Section

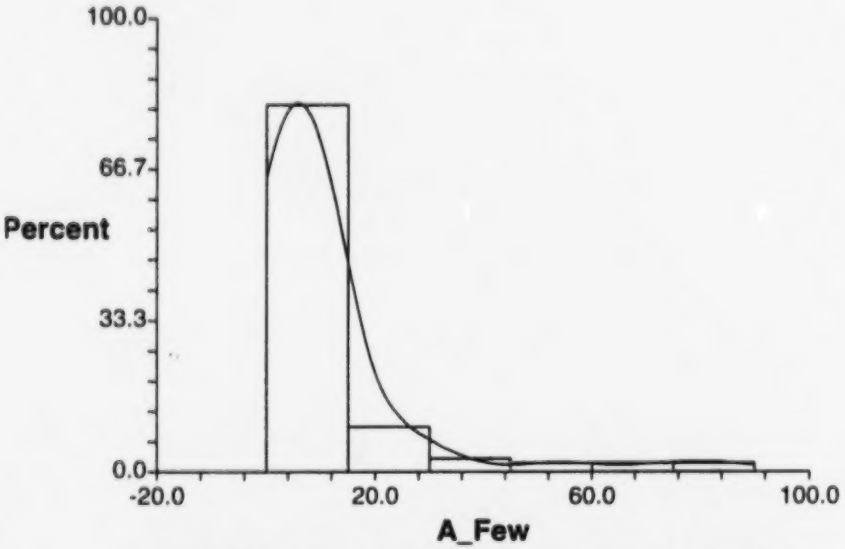

FIGURE 2. HISTOGRAM FOR "A FEW"

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Database D:\AERA\QualDB.S0

Histogram Section

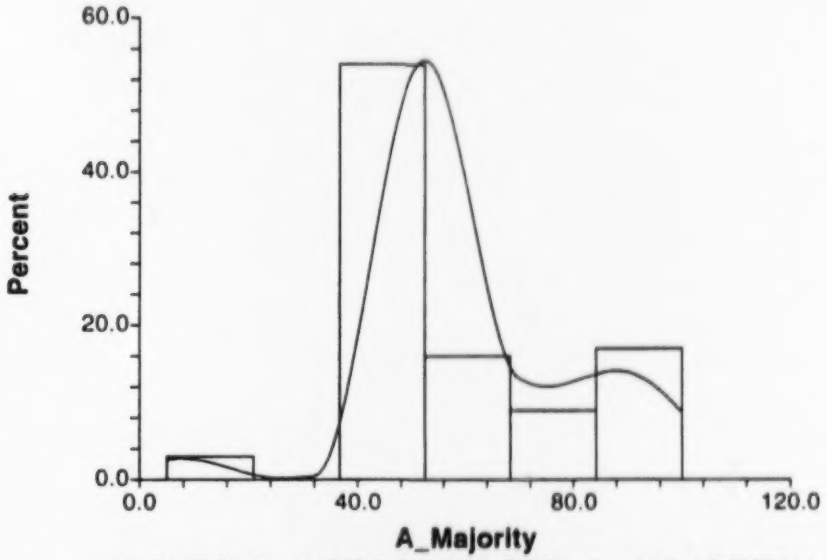

FIGURE 3. HISTOGRAM FOR "A MAJORITY"

Page/Date/Time 1 03-31-1998 12:57:33
Database D:\AERA\QualDB.S0

Histogram Section

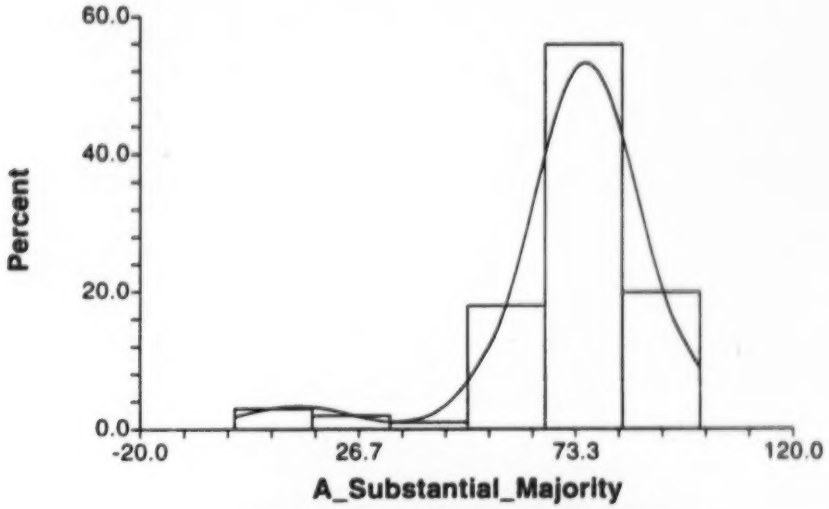

FIGURE 4. HISTOGRAM FOR "A SUBSTANTIAL MAJORITY"

Page/Date/Time 1 03-31-1998 13:02:35
Database D:\AERA\QualDB.S0

Histogram Section

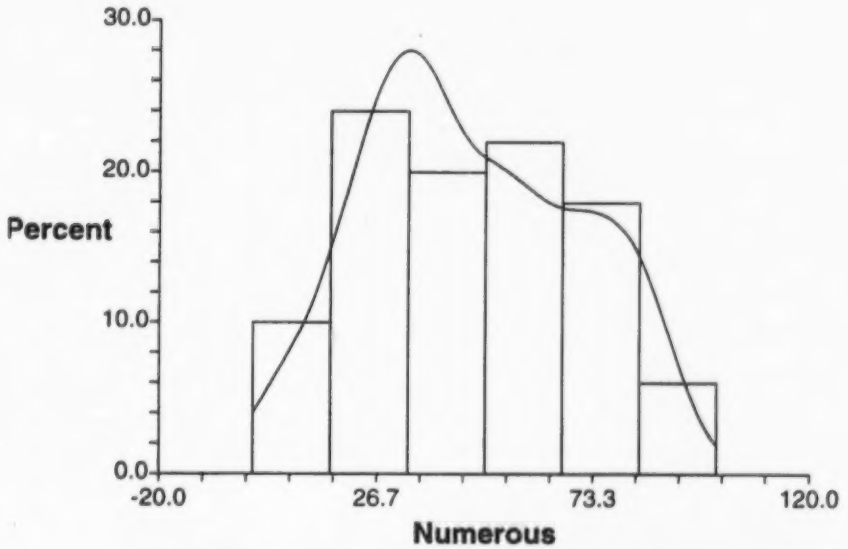

FIGURE 5. HISTOGRAM FOR "NUMEROUS"

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Database D:\AERA\QualDB.S0

Histogram Section

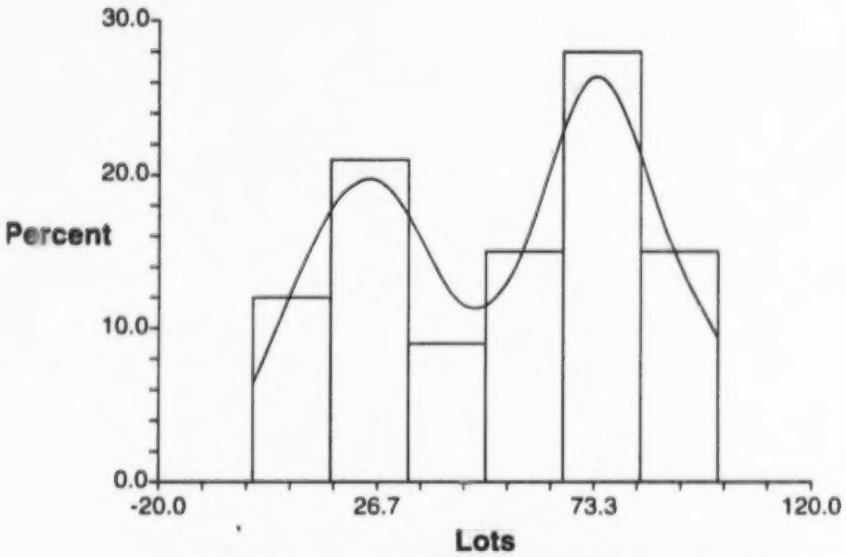

FIGURE 6. HISTOGRAM FOR "LOTS"

Histogram Section

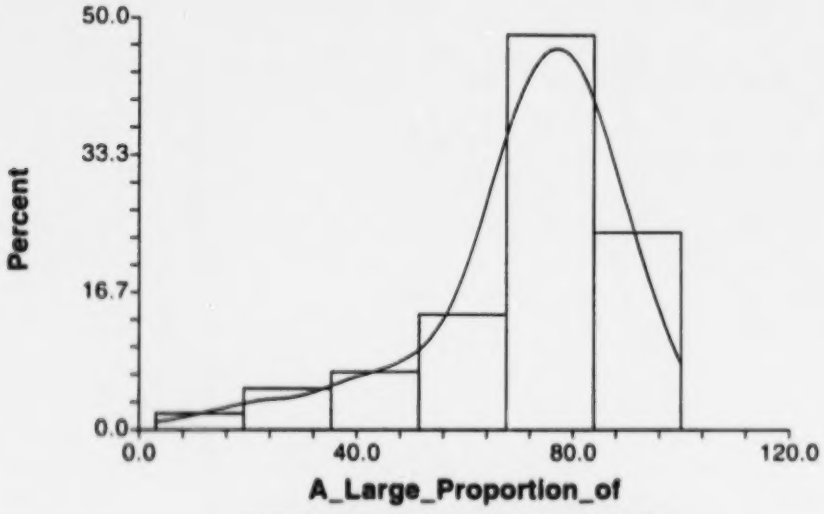

FIGURE 7. HISTOGRAM FOR "A LARGE PROPORTION OF"

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Database D:\AERA\QualDB.S0

Histogram Section

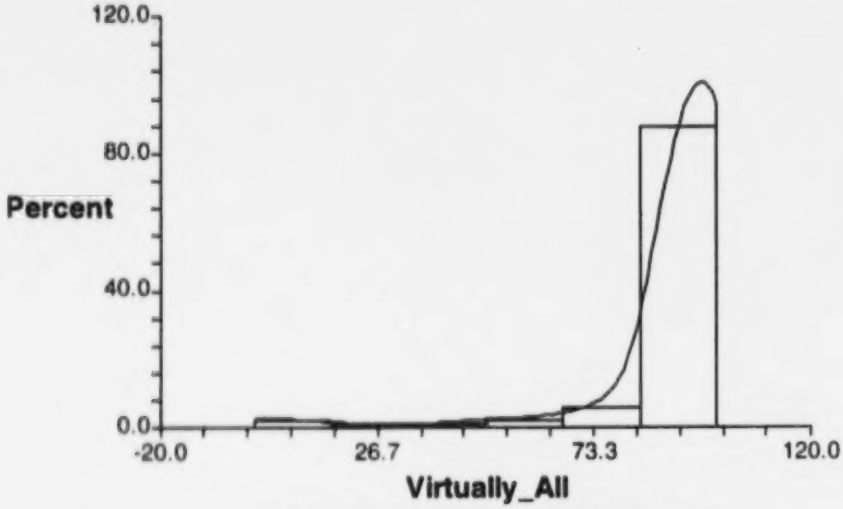

FIGURE 8. HISTOGRAM FOR "VIRTUALLY ALL"